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Building panel, assembly and method

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Abstract

5 A wall cladding assembly is disclosed having elongate jointing elements 12 for mounting to a frame 11 and having flanges 17 extending therefrom, a plurality of walling members 10 having elongate recesses along opposed sides thereof for receiving the flanges 17 whereby the plurality of walling members 10 is supported by the plurality of jointing elements 12 to form a wall, and elongate cover means 15 for fastening to the jointing elements 12 to cover the jointing
10 elements 12 between adjoining walling members 10.

FIG 1

15

AUSTRALIA

Patents Act 1990

COMPLETE SPECIFICATION

STANDARD PATENT

APPLICANT: HILTIVE PTY LIMITED

Invention Title: BUILDING PANEL, ASSEMBLY AND METHOD

The following statement is a full description of this invention, including the best method of performing it known to me:

"BUILDING PANEL, ASSEMBLY AND METHOD"

Technical field

This invention relates to a building panel, and to a building assembly and
5 method.

The invention has particular but not exclusive application to a building assembly and method for fastening cladding panels to building frames, and to cladding panels for use in the assembly and method.

10 Background of Invention

It is known for cladding panels to be fastened to building frames by a variety of methods and fastening assemblies. Australian patent 735352 in the name of the present applicant illustrate one such method and fastening assembly.

15

Summary of Invention

The present invention aims to provide an alternative to known building panels, and building assemblies and methods.

This invention in one aspect resides broadly in a building assembly
20 including:-

a plurality of elongate jointing elements adapted to be fastened relative to a building frame and each including an outwardly facing channel portion and at least one flange extending laterally from the channel portion for engaging a cladding panel;

25 a plurality of cladding panels having elongate recesses along and proximate the edges thereof for engaging the at least one flange for supporting the cladding panel to form a wall, and

elongate cover means fastenable to the at least one flange for covering the channel portion.

30 In another aspect this invention resides broadly in a method of fastening cladding panels to building frames, the method including:-

fastening an elongate jointing element relative to the building frame, the jointing element including an outwardly facing channel portion for fixing

the jointing element relative to the building frame and at least one flange extending laterally from the channel portion for engaging a cladding panel; forming an elongate recess along and proximate the edge of a cladding panel;

- 5 engaging the flange in the recess, and
fastening elongate cover means to the at least one flange for covering the channel portion.

It is preferred that the arrangement is such that the cover means when fastened to the flange is receivable with the flange within the recess in the
10 cladding panel.

In another aspect this invention resides broadly in a wall cladding assembly including:-

- elongate jointing elements for mounting to a frame and having flanges extending therefrom;
- 15 a plurality of walling members having elongate recesses along opposed sides thereof for receiving the flanges whereby the plurality of walling members is supported by the plurality of jointing elements to form a wall, and

elongate cover means for fastening to the jointing elements to cover
20 the jointing elements between adjoining walling members.

In another aspect this invention resides broadly in a method of assembling a wall, the method including:-

- mounting a plurality of elongate jointing elements having flanges extending therefrom to a frame;
- 25 supporting a walling member having elongate recesses along opposed sides thereof between a pair of jointing elements by positioning the flanges in the recesses, and
fastening elongate cover means to the jointing elements to cover the jointing elements between adjoining walling members.

30 In another aspect this invention resides broadly in a building assembly including:-

a plurality of elongate jointing elements adapted to be fastened relative to a building frame and each including an outwardly facing channel portion

and at least one flange extending laterally from the channel portion for engaging a cladding panel;

a plurality of cladding panels having elongate recesses along and proximate the edges thereof for engaging the at least one flange for

5 supporting the cladding panel to form a wall, and

sealing means positionable between the building frame and an elongate jointing element when fastened thereto for substantially sealing the space between the building frame and the cladding panel against the ingress of moisture.

10 In another aspect this invention resides broadly in a method of fastening cladding panels to building frames, the method including:-

positioning sealing means between an elongate jointing element and the building frame, the jointing element including an outwardly facing channel portion for fixing the jointing element relative to the building frame and at least

15 one flange extending laterally from the channel portion for engaging a cladding panel, and the sealing means being adapted to substantially seal the space between the building frame and the cladding panels against the ingress of moisture;

fastening the elongate jointing element relative to the building frame;

20 forming an elongate recess along and proximate the edge of a cladding panel, and

engaging the flange in the recess.

It is preferred that the sealing means is a longitudinally extending gasket.

25 It is also preferred that the gasket includes longitudinally extending rib means adapted to resiliently engage the inner surface of the cladding panels when the at least one flange engages the recess.

It is also preferred that the rib means includes a plurality of parallel ribs extending outwardly of the building frame when the gasket is positioned
30 thereagainst by the jointing element.

It is also preferred that the ribs are dimensioned such that engagement of a flange of a jointing element in a recess in a cladding panel biases the ribs against the inner surface of the cladding panel.

In another aspect this invention resides broadly in a wall cladding assembly including:-

elongate jointing elements for mounting to a frame and having flanges extending therefrom:

5 sealing means positionable between the frame and an elongate jointing element when fastened thereto for substantially sealing the wall cavity against the ingress of moisture, and

a plurality of walling members having elongate recesses along opposed sides thereof for receiving the flanges whereby the plurality of
10 walling members is supported by the plurality of jointing elements to form a wall.

In another aspect this invention resides broadly in a method of assembling a wall, the method including:-

positioning sealing means between a frame and a plurality of elongate
15 jointing elements, the sealing means being adapted to seal the wall cavity against the ingress of moisture and the jointing elements having flanges extending therefrom;

mounting the jointing elements to the frame, and

supporting a walling member having elongate recesses along opposed
20 sides thereof between a pair of jointing elements by positioning the flanges in the recesses.

In another aspect this invention resides broadly in a building assembly including:-

a plurality of elongate jointing elements adapted to be fastened relative
25 to a building frame and each including an outwardly facing channel portion and at least one flange extending laterally from the channel portion for engaging a cladding panel, and

a plurality of cladding panels having elongate recesses along and proximate the edges thereof for engaging the at least one flange for
30 supporting the cladding panel to form a wall;

the recesses being formed by affixing a longitudinally extending strip to the panel proximate an edge thereof.

In another aspect this invention resides broadly in a cladding panel for use in a building assembly wherein a plurality of elongate jointing elements are adapted to be fastened relative to a building frame, the jointing elements including an outwardly facing channel portion and at least one flange
5 extending laterally from the channel portion for engaging the cladding panel, the panel including:-

- a substantially planar surface area, and
- a plurality of elongate recesses along and proximate edges thereof for engaging a flange for supporting the cladding panel to form a wall;
- 10 the recesses being formed by affixing a longitudinally extending strip to the panel proximate an edge thereof.

In another aspect this invention resides broadly in a method of fastening cladding panels to building frames, the method including:-

- fastening an elongate jointing element relative to the building frame,
- 15 the jointing element having an outwardly facing channel portion for fixing the jointing element relative to the building frame and at least one flange extending laterally from the channel portion for engaging a cladding panel;
- forming an elongate recess along and proximate the edge of the cladding panel, the recess being formed by affixing a longitudinally extending
20 strip to the panel proximate an edge thereof, and
- engaging the flange in the recess.

It is preferred that the strip has a longitudinally extending rebated lap, the rebate constituting the recess when the strip is fixed to the panel.

- It is also preferred that a longitudinally extending gasket is fixed to the
25 outer edge of the lap for sealing against the outwardly facing channel portion when the flange is received in the recess.

- It is also preferred that the strip is fixed to the panel such that the distance between the outer edge of the lap and the edge of the panel is slightly less than the combined thickness of the outwardly facing channel
30 portion and the gasket.

Description of Drawings

In order that this invention may be more easily understood and put into practical effect, reference will now be made to the accompanying drawings which illustrate a preferred embodiment of the invention, wherein:-

FIG 1 is an exploded perspective view of a building assembly including
5 an edging cover strip in accordance with the present invention;

FIG 2 is an assembled plan view of the building assembly seen in FIG 1;

FIG 3 is an assembled plan view of a variation of the building assembly seen in FIG 1;

FIGS 4-7 are sectional elevations of a building assembly including a
10 sealing element in accordance with the present invention, and progressively illustrate the method of this aspect of the invention;

FIG 8 illustrates an assembled plan view of a building assembly including a panel edge recess arrangement in accordance with the present invention;

15 FIGS 9 to 18 illustrate other configurations where the various aspects of the present invention can be utilised and wherein:-

FIG 9 illustrates typical soffit detail;

FIG 10 illustrates typical internal corner detail;

FIG 11 illustrates typical external corner detail;

20 FIG 12 illustrates another typical internal corner detail;

FIG 13 illustrates another typical external corner detail;

FIG 14 illustrates another typical external corner detail;

FIG 15 illustrates typical window sill detail;

FIG 16 illustrates typical window head detail;

25 FIG 17 illustrates typical wall base detail, and

FIG 18 illustrates typical parapet capping detail.

Description of Preferred Embodiment of Invention

One aspect of the invention is best explained by turning first to FIG 7
30 which shows cladding panel walling fixed in place on a building. As seen in FIG 7, the building assembly of the present invention includes a plurality of elongate jointing elements 12 (of which only one is shown) adapted to be fastened relative to a building frame in the form of top hat section 11 by screws 13.

Each jointing element 12 is in the form of a top hat section and includes an outwardly facing channel portion 22 and at least one flange 17 (see FIG 4 wherein, as is preferable, a pair of flanges 17 are shown) extending laterally from the channel portion 22 for engaging a cladding panel 10. A plurality of
5 cladding panels 10 have elongate recesses 18 formed in their edges (see FIG 6) for engaging the flanges 17 for supporting the cladding panels 10 to form a wall. Sealing means in the form of an elongated or longitudinally extending gasket 14 is positionable between building frame 11 and elongate jointing elements 12 when fastened thereto for substantially sealing the space
10 between building frame 11 and the cladding panels 10 against the ingress of moisture.

Gasket 14 is made from a resilient flexible material such as EPDM or neoprene for example and has longitudinally extending parallel ribs 16 which are adapted to resiliently engage the inner surface of cladding panels 10
15 when flanges 17 engage in recesses 18 in cladding panels 10. Ribs 16 extend outwardly of building frame 11 when gasket 12 is positioned thereagainst by jointing element 12 when fastened to the building frame by screws 13.

As is best seen in FIGS 6 and 7 ribs 16 are dimensioned such that
20 engagement of flanges 17 in recesses 18 biases the ribs against the inner surface of cladding panels 10. Thus the outwardly extending height of ribs 16 is slightly greater than the external dimension of the channel portion 22 of jointing elements 12 less the width of the inner portion of walling panel 10 formed by recess 18. This results in the biasing configuration seen in FIG 7
25 when the panels are slid over the flanges as seen in the directions of the arrows in FIG 6.

In use, as seen progressively in FIGS 4 – 7, cladding panels are fastened to building frames in the method of the present invention by positioning sealing means 14 between an elongate jointing element 12 and
30 the building frame 11, fastening the elongate jointing element 12 relative to the building frame, forming an elongate recess 18 in the edge of a cladding panel 10, and engaging flange 17 in recess 18. The jointing element 12 includes an outwardly facing channel portion 22 for fixing jointing element 12

relative to the building frame 11 and flanges 17 extending laterally from the channel portion 22 for engaging cladding panels 10. The sealing means 14 is adapted to substantially seal the space between the building frame 11 and the cladding panels 10 against the ingress of moisture.

5 It will thus be appreciated that in one aspect the present invention can be seen as a wall cladding assembly having elongate jointing elements 12 for mounting to a frame 11 and having flanges 17 extending therefrom, sealing means 14 positionable between the frame 11 and an elongate jointing element 12 when fastened thereto for substantially sealing the wall cavity
10 against the ingress of moisture, and a plurality of walling members 20 having elongate recesses 18 along opposed sides thereof for receiving the flanges 17 whereby the plurality of walling members 20 is supported by the plurality of jointing elements 12 to form a wall.

 In use, a wall is assembled in accordance with the method of one
15 aspect of the invention by positioning sealing means 14 between a frame 11 and a plurality of elongate jointing elements 12, the sealing means 14 being adapted to seal the wall cavity against the ingress of moisture and the jointing elements 12 having flanges 17 extending therefrom. The jointing elements 12 are mounted to the frame 11, and a walling member 20 having elongate
20 recesses 18 along opposed sides thereof is supported between a pair of jointing elements 12 by positioning the flanges 17 in the recesses 18.

 Another aspect of the invention is illustrated in FIGS 1 – 3 wherein elongate cover means in the form of strips 15 are fastened to the flanges 17 as seen in FIG 2 for covering the channel portion 22. Strips 15 and flanges
25 17 when fastened together are receivable within recesses 18. Strips 15 are provided in a range of colours so that a range of aesthetic choices are available to coordinate with a range of panel colourings and tonings.

 It will be appreciated that cover strip 15 may be fastened to flanges 17 before panels 10 are slid over the flanges (as illustrated) or alternatively can
30 be inserted into recesses 18 and fastened to flanges 17 when the panels 10 have already been slid over flanges 17.

 An alternative arrangement to that described above is illustrated in FIG 3 wherein recess 18 is in the form of a rebate, flange 17 being received in the

rebate to retain the panel 10, the arrangement being such that cover strip 15 finishes flush with the face of panel 10.

Thus it will be appreciated that a building assembly in accordance with this aspect of the invention includes a plurality of elongate jointing elements 12
5 adapted to be fastened relative to a building frame 11 and each including an outwardly facing channel portion 22 and at least one flange 17 extending laterally from the channel portion 22 for engaging a cladding panel 10. The building assembly also has a plurality of cladding panels 10 having elongate recesses 18 along and proximate the edges thereof for engaging the at least
10 one flange 17 for supporting the cladding panel 10 to form a wall, and elongate cover means 15 fastenable to the at least one flange 17 for covering the channel portion 22.

In use, cladding panels are fastened to building frames in accordance with the method of this aspect of the invention by fastening an elongate
15 jointing element 12 relative to the building frame 11, the jointing element 12 including an outwardly facing channel portion 22 for fixing the jointing element 12 relative to the building frame 11 and at least one flange 17 extending laterally from the channel portion 22 for engaging a cladding panel 10. An elongate recess 18 is formed along and proximate the edge of a cladding
20 panel 10, the flange 17 is engaged in the recess 18, and elongate cover means 15 are fastened to the at least one flange 17 for covering the channel portion 22.

It will also be appreciated that a wall cladding assembly in accordance with this aspect of the invention includes elongate jointing elements 12 for
25 mounting to a frame 11 and having flanges 17 extending therefrom, a plurality of walling members 10 having elongate recesses 18 along opposed sides thereof for receiving the flanges 17 whereby the plurality of walling members 10 is supported by the plurality of jointing elements 12 to form a wall, and elongate cover means 15 for fastening to the jointing elements 12 to cover the
30 jointing elements 12 between adjoining walling members 10.

In use, a wall is assembled in accordance with the method of this aspect of the invention by mounting a plurality of elongate jointing elements 12 having flanges 17 extending therefrom to a frame 11; supporting a walling

member 10 having elongate recesses 18 along opposed sides thereof between a pair of jointing elements 12 by positioning the flanges 17 in the recesses 18, and fastening elongate cover means 15 to the jointing elements 12 to cover the jointing elements 12 between adjoining walling members 10.

5 Another aspect of the building assembly of the present invention is best seen in FIG 8 and includes a plurality of elongate jointing elements 12 (of which only one is shown) adapted to be fastened relative to a building frame in the form of top hat section 11 by screws 13. Each jointing element 12 is in the form of a top hat section and includes an outwardly facing channel portion
10 22 and at least one flange 17 (as is preferable, a pair of flanges 17 are shown) extending laterally from the channel portion 22 for engaging a cladding panel 10. A plurality of cladding panels 10 have recesses 18 formed along and proximate their edges for engaging the flanges 17 for supporting the cladding panels 10 to form a wall. Recesses 18 are formed by affixing a
15 longitudinally extending strip 19 to panel 10 proximate an edge thereof. Strip 19 is preferably an aluminium extrusion bonded to panel 10 and has a longitudinally extending rebated lap 20, the rebate constituting recess 18 when strip 19 is fixed to panel 10.

 A longitudinally extending gasket 21 is fixed to the outer edge of the lap
20 20 for sealing against the outwardly facing channel portion 22 when flange 17 is received in recess 18. Gasket 21 is preferably made of a closed cell foam. Strip 19 is fixed to panel 10 such that the distance between the outer edge of lap 20 and the edge of panel 10 is slightly less than the combined thickness of the outwardly facing channel portion 22 and gasket 21. Consequently gasket
25 21 will be compressed to seal against the outwardly facing channel portion 22 when flange 17 is received in recess 18.

 In use, cladding panels 10 are fastened to building frames 11 in the method of this aspect of the present invention by fastening an elongate jointing element 12 relative to the building frame, the jointing element having
30 an outwardly facing channel portion 22 for fixing the jointing element relative to the building frame and at least one flange 17 extending laterally from the channel portion 22 for engaging a cladding panel 10. An elongate recess 18 is formed along and proximate the edge of the cladding panel 10, the recess

being formed by affixing a longitudinally extending strip 19 to the panel proximate an edge thereof. Flange 17 is then engaged in recess 18.

FIGS 9 to 18 illustrate the use of the various aspects of the present invention in a variety of applications as listed above in the description of the
5 drawings.

A range of materials can be used for the various components and the scope of protection is not limited in this regard. Thus the panels for example can be made of any suitable cladding material.

It will be appreciated that the various preferred embodiments of the
10 present invention have a number of advantages over known methods and assemblies of fastening cladding panels to building frames. These include:-

The aesthetic flexibility possible by use of the coloured cover strip.

Removal of sealing gaskets from direct UV light (possible by use of the real sealing arrangement) significantly extends the gasket effective life.

15 Furthermore suitable gaskets for external mounting as in the prior art are available in a limited colour range and the replacement of the external gasket by a cover strip allows for the space between adjoining panels to be better colour coordinated with panel colours.

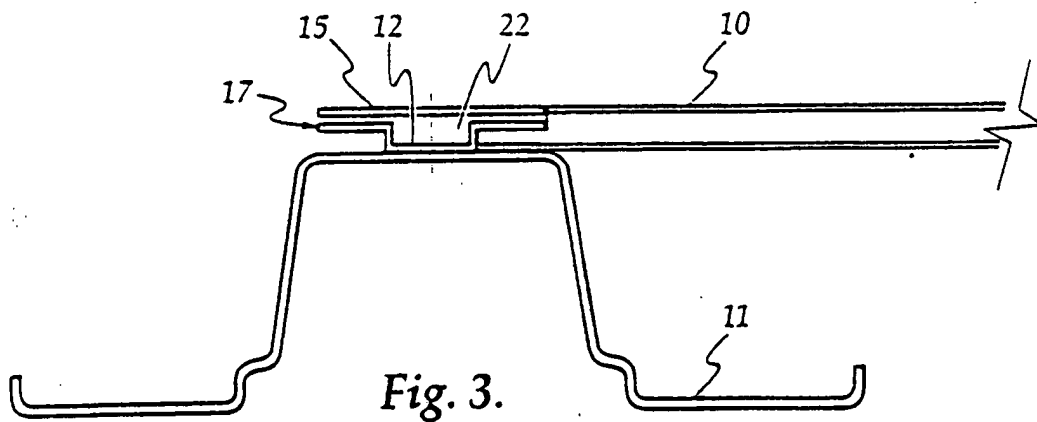
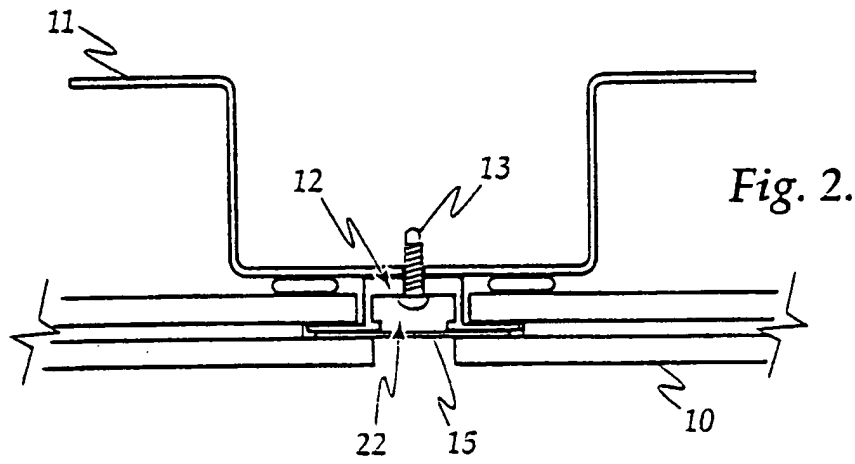
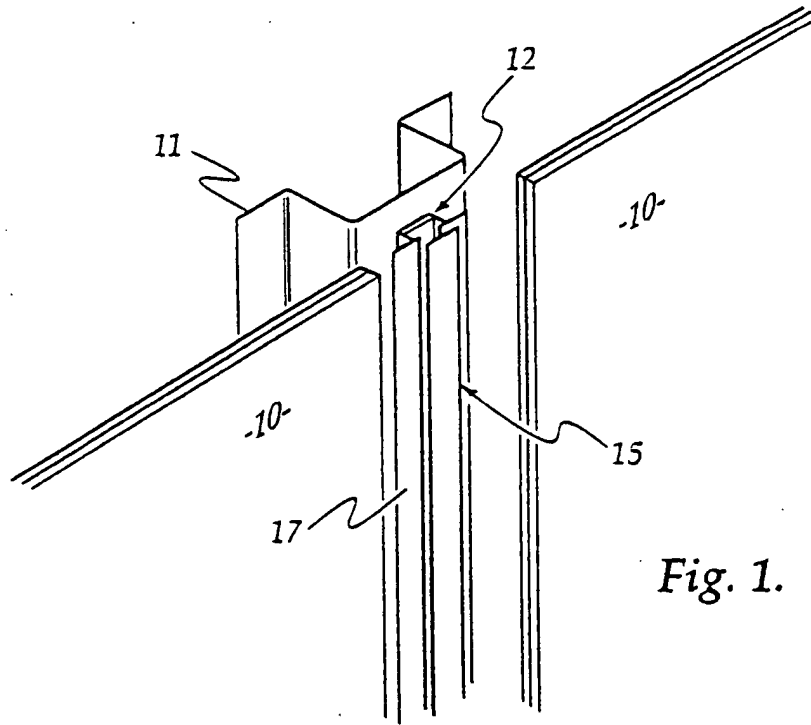
20 The fixing of relatively thin panels to building frames is facilitated, particularly panels which are sufficiently thin not to allow for grooves to be formed in the edges.

It will of course be realised that whilst the above has been given by way of an illustrative example of this invention, all such and other modifications and variations hereto, as would be apparent to persons skilled in the art, are deemed
25 to fall within the broad scope and ambit of this invention as is herein set forth.

The claims defining the invention are as follows:-

1. A building assembly including:-
 - a plurality of elongate jointing elements adapted to be fastened relative
5 to a building frame and each including an outwardly facing channel portion
and at least one flange extending laterally from the channel portion for
engaging a cladding panel;
 - a plurality of cladding panels having elongate recesses along and
proximate the edges thereof for engaging the at least one flange for
10 supporting the cladding panel to form a wall, and
 - sealing means positionable between the building frame and an
elongate jointing element when fastened thereto for substantially sealing the
space between the building frame and the cladding panel against the ingress
of moisture.
- 15 2. A method of fastening cladding panels to building frames, the method
including:-
 - positioning sealing means between an elongate jointing element and
the building frame, the jointing element including an outwardly facing channel
20 portion for fixing the jointing element relative to the building frame and at least
one flange extending laterally from the channel portion for engaging a
cladding panel, and the sealing means being adapted to substantially seal the
space between the building frame and the cladding panels against the ingress
of moisture;
 - 25 fastening the elongate jointing element relative to the building frame;
 - forming an elongate recess along and proximate the edge of a cladding
panel, and
 - engaging the flange in the recess.
- 30 3. A building assembly as claimed in claim 1, wherein the sealing means
is a longitudinally extending gasket.

4. A building assembly as claimed in claim 3, wherein the gasket includes longitudinally extending rib means adapted to resiliently engage the inner surface of the cladding panels when the at least one flange engages the recess.
- 5 5. A building assembly as claimed in claim 4, wherein the rib means includes a plurality of parallel ribs extending outwardly of the building frame when the gasket is positioned thereagainst by the jointing element.
6. A building assembly as claimed in claim 5, wherein the ribs are
10 dimensioned such that engagement of a flange of a jointing element in a recess in a cladding panel biases the ribs against the inner surface of the cladding panel.
7. A wall cladding assembly including:-
15 elongate jointing elements for mounting to a frame and having flanges extending therefrom:
sealing means positionable between the frame and an elongate jointing element when fastened thereto for substantially sealing the wall cavity against the ingress of moisture, and
20 a plurality of walling members having elongate recesses along opposed sides thereof for receiving the flanges whereby the plurality of walling members is supported by the plurality of jointing elements to form a wall.
- 25 8. A method of assembling a wall, the method including:-
positioning sealing means between a frame and a plurality of elongate jointing elements, the sealing means being adapted to seal the wall cavity against the ingress of moisture and the jointing elements having flanges extending therefrom;
30 mounting the jointing elements to the frame, and
supporting a walling member having elongate recesses along opposed sides thereof between a pair of jointing elements by positioning the flanges in the recesses.



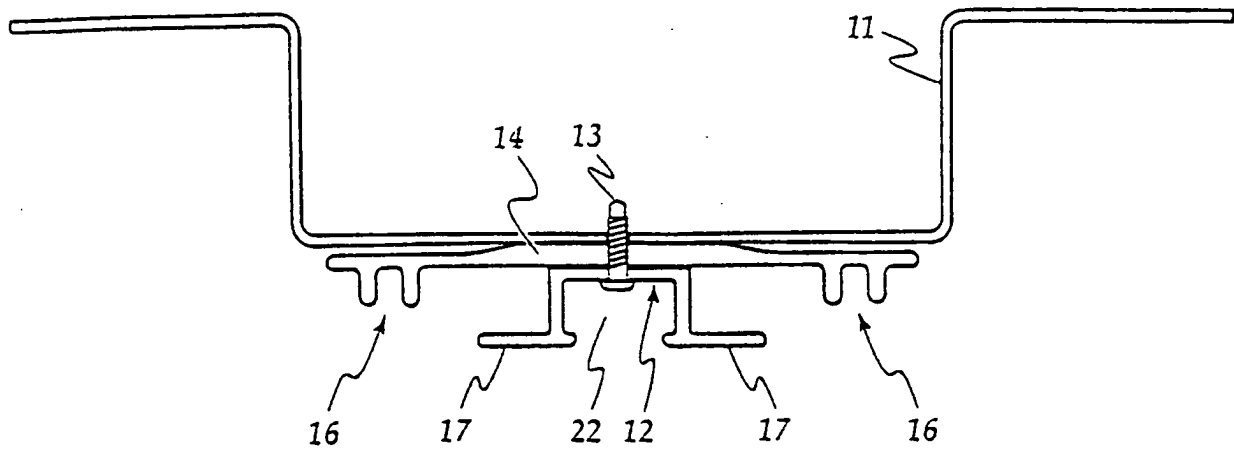


Fig. 4.

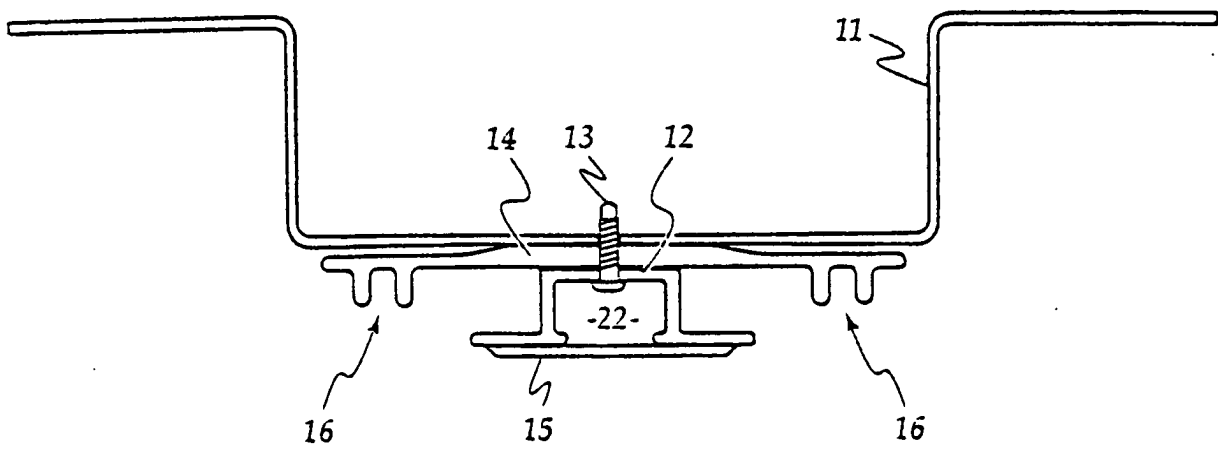


Fig. 5.

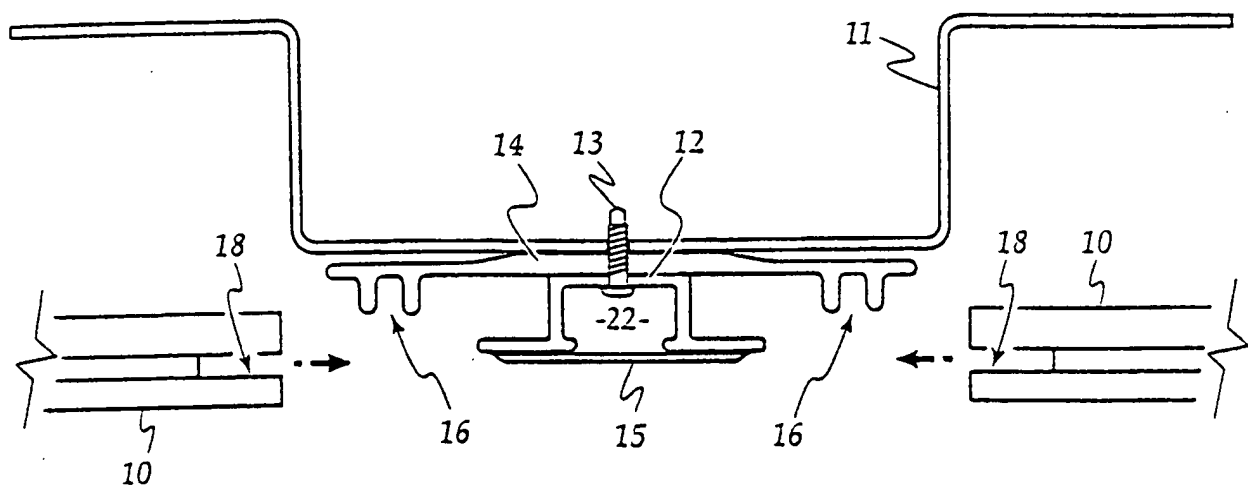


Fig. 6.

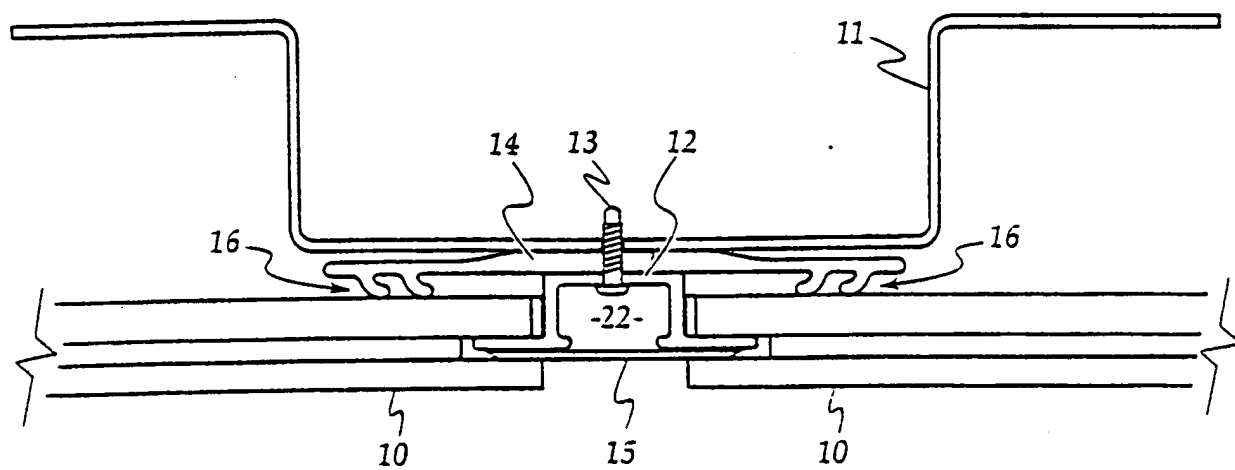


Fig. 7.

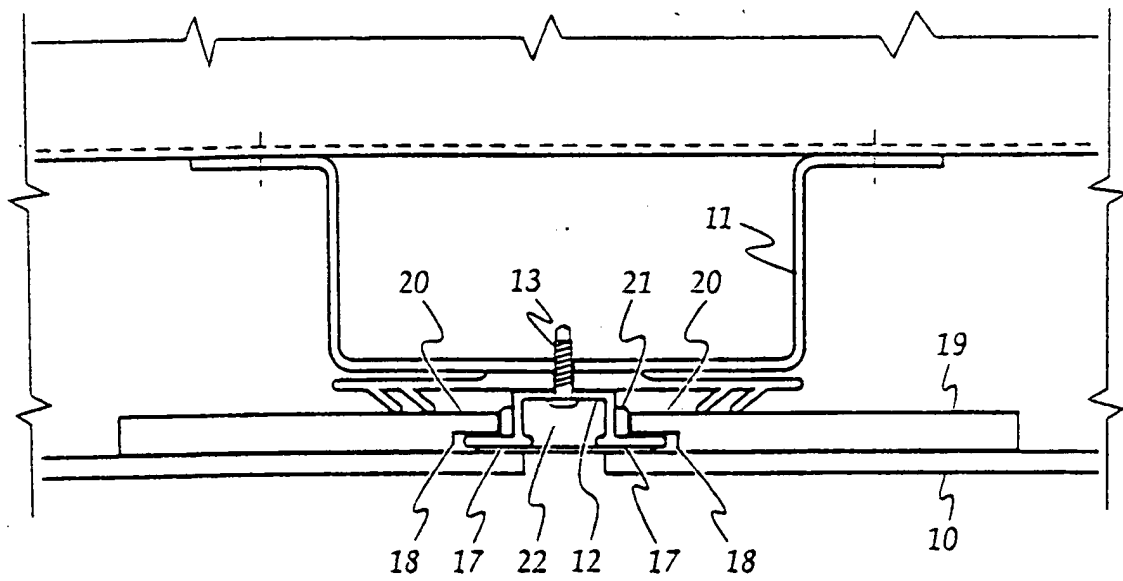


Fig. 8.

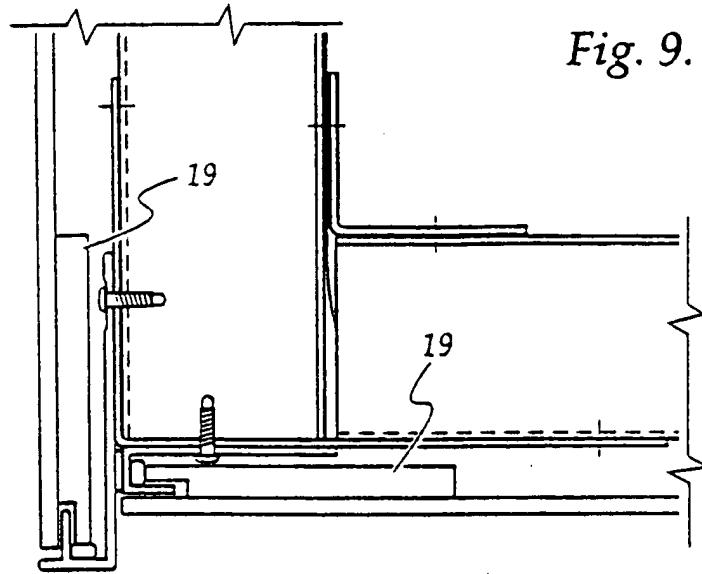
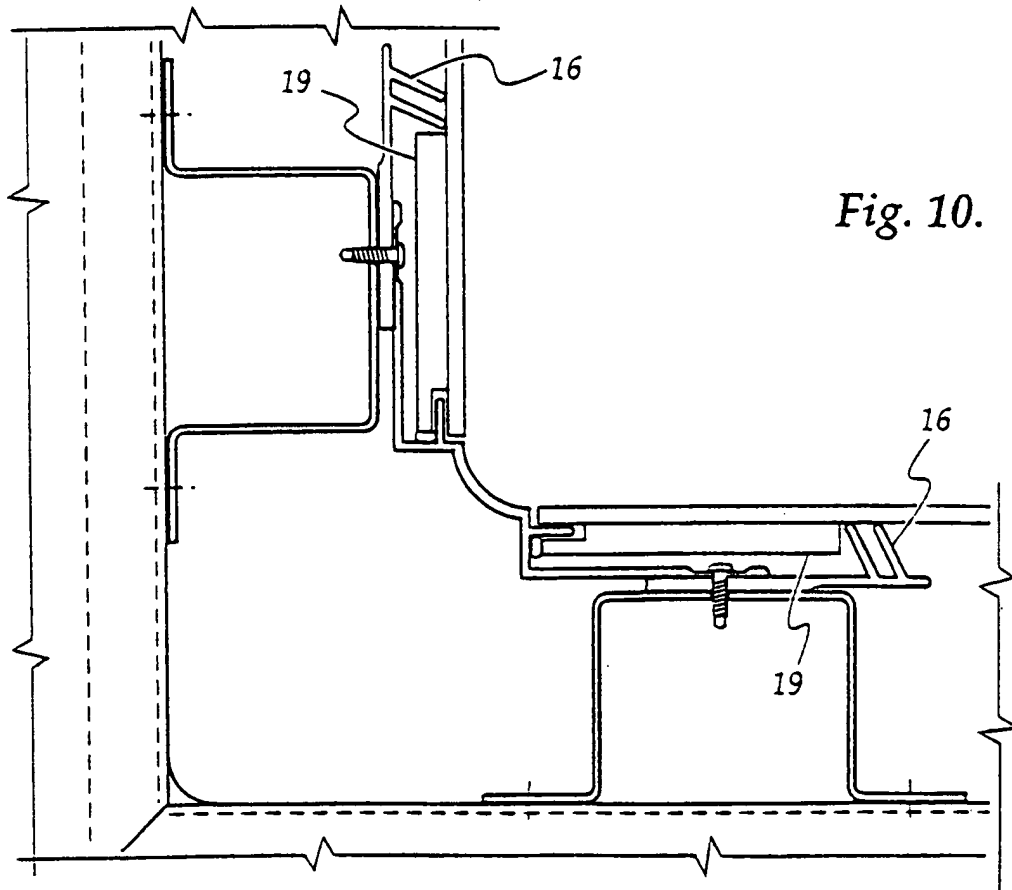
Fig. 9.*Fig. 10.*

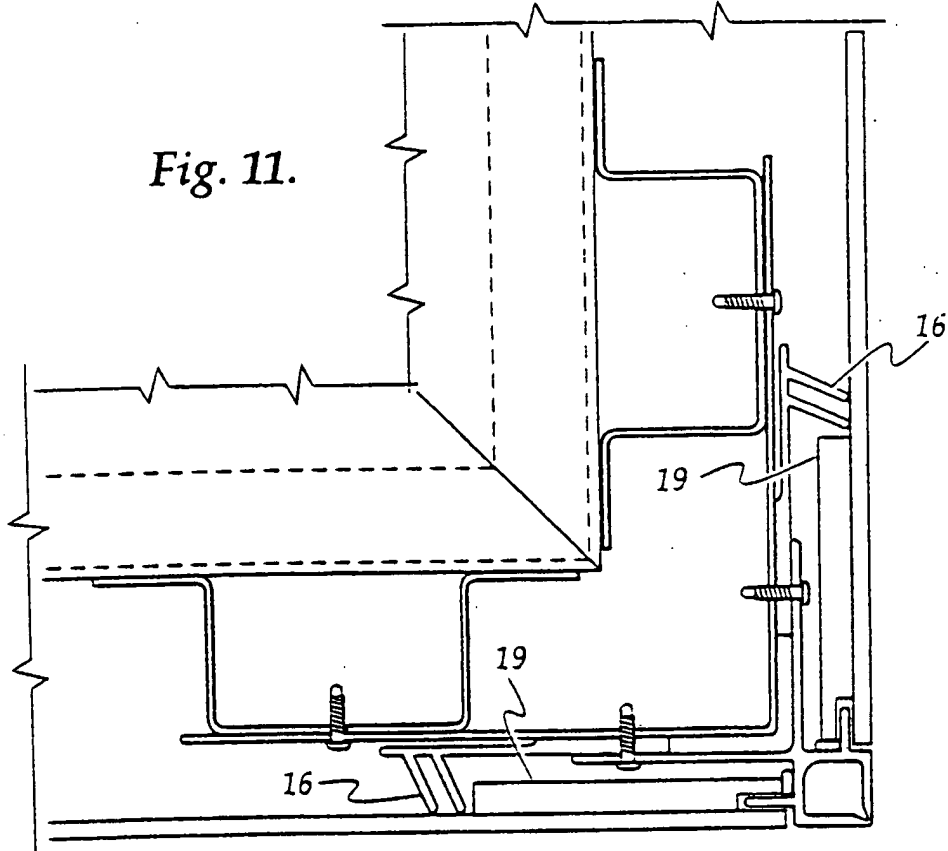
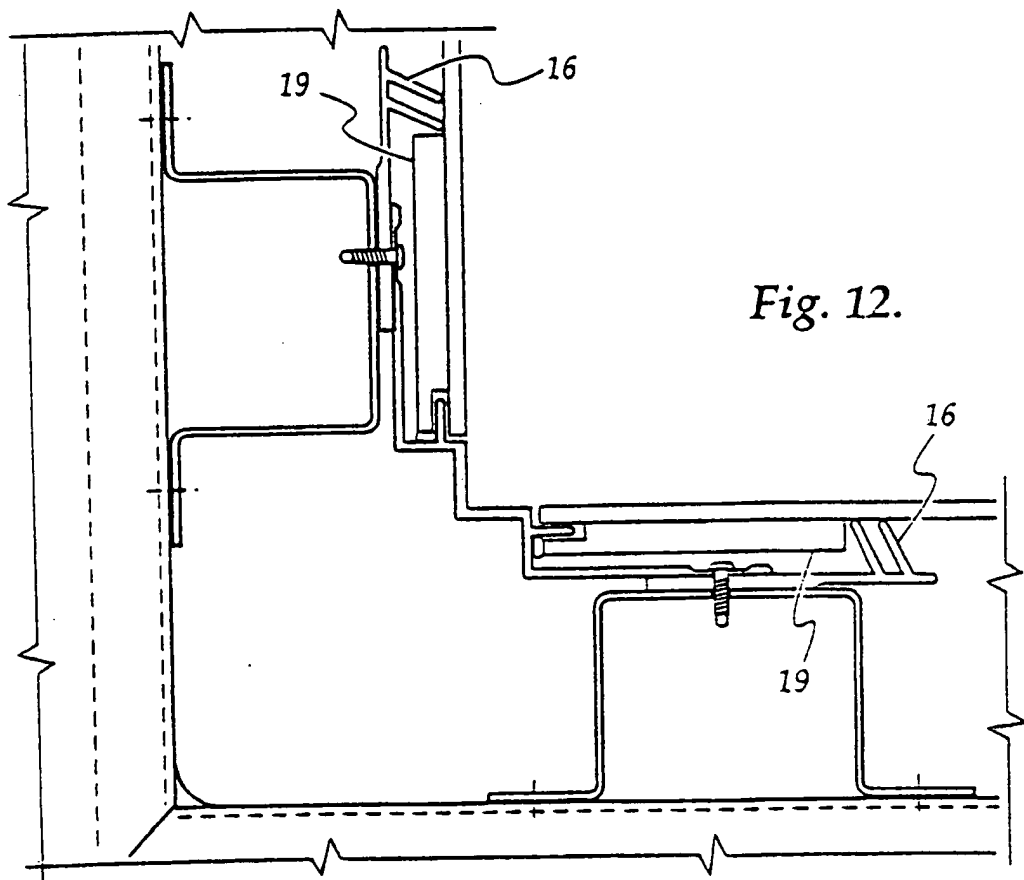
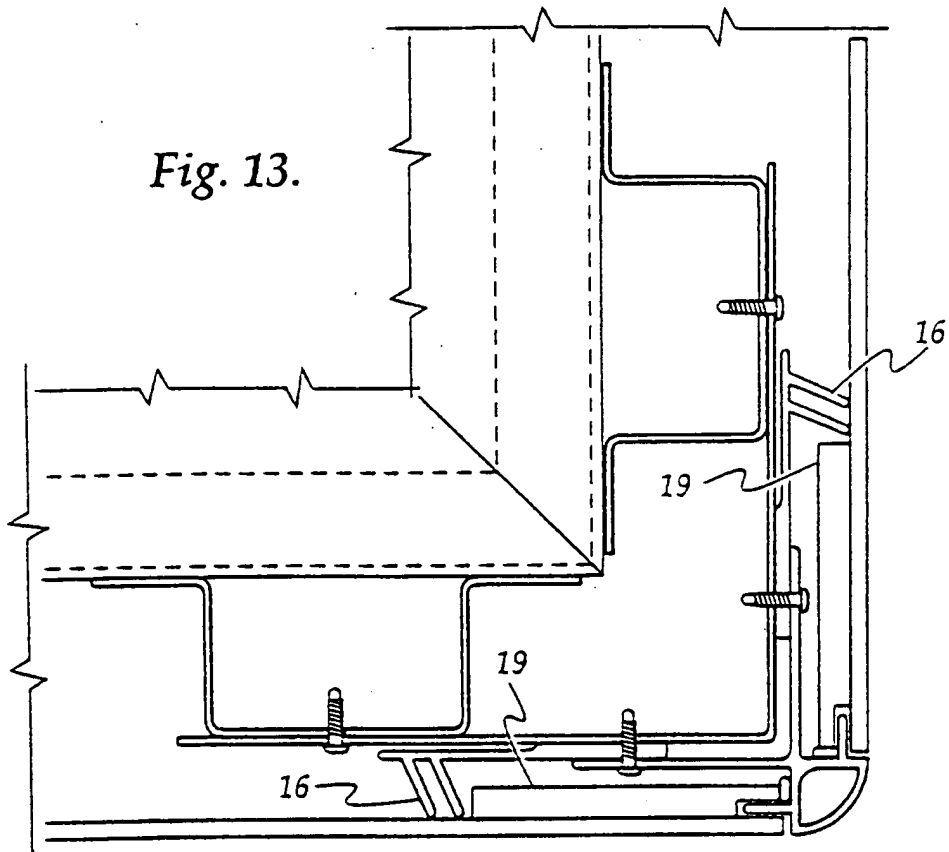
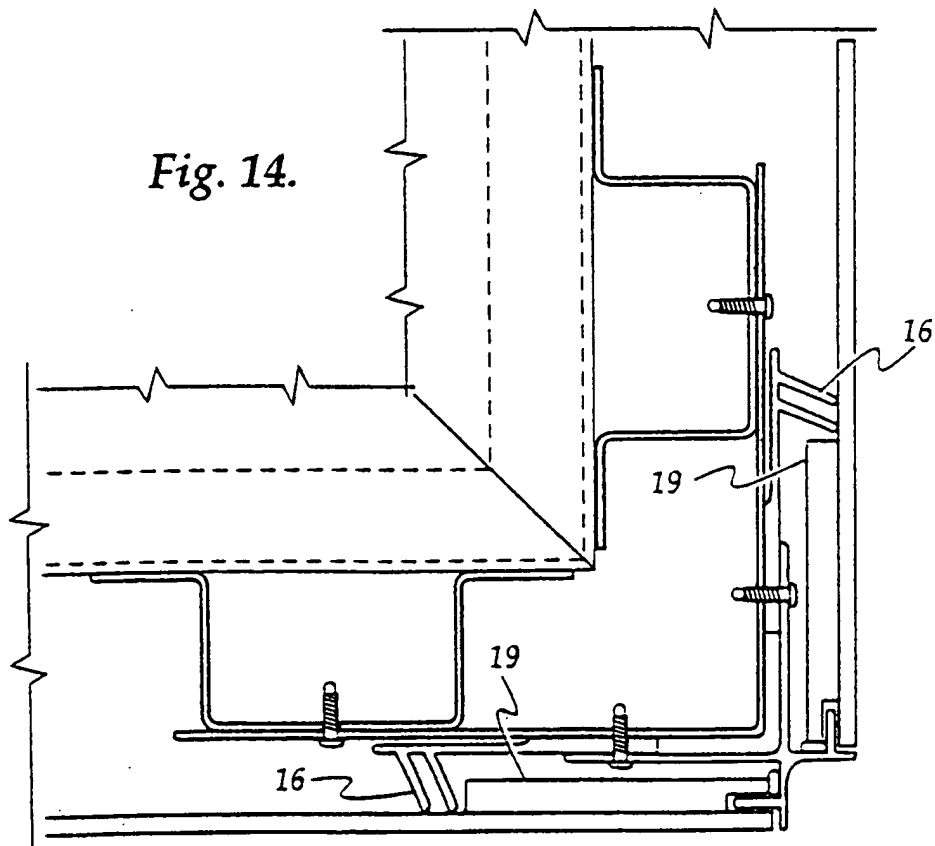
Fig. 11.*Fig. 12.*

Fig. 13.*Fig. 14.*

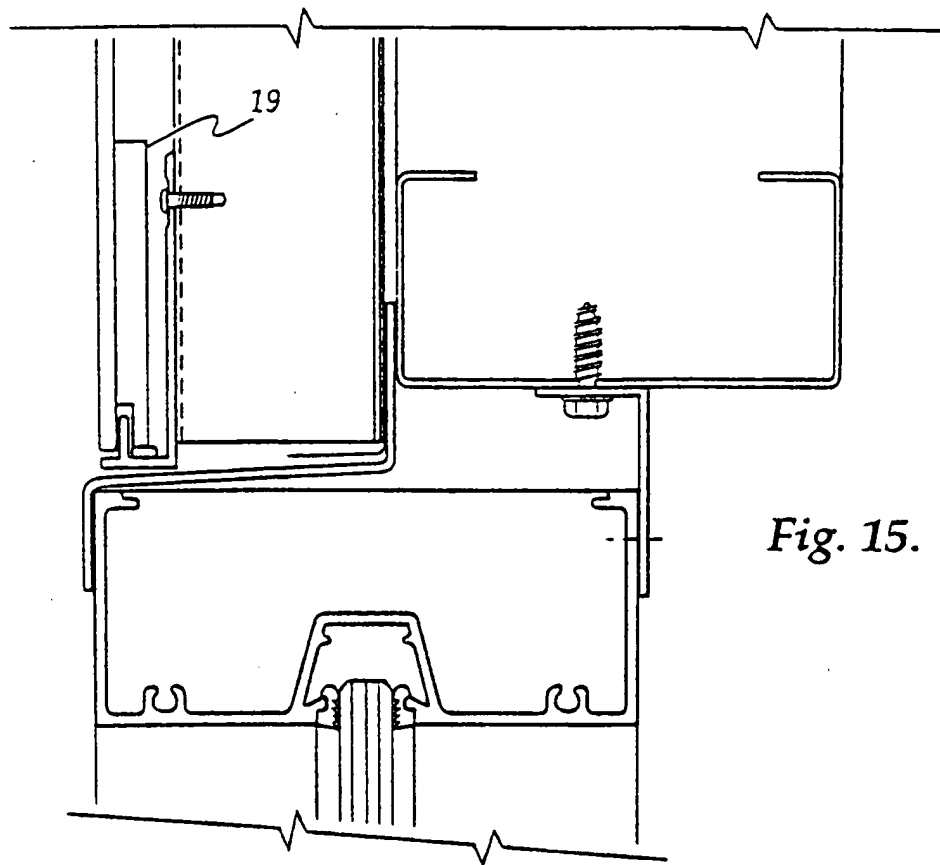


Fig. 15.

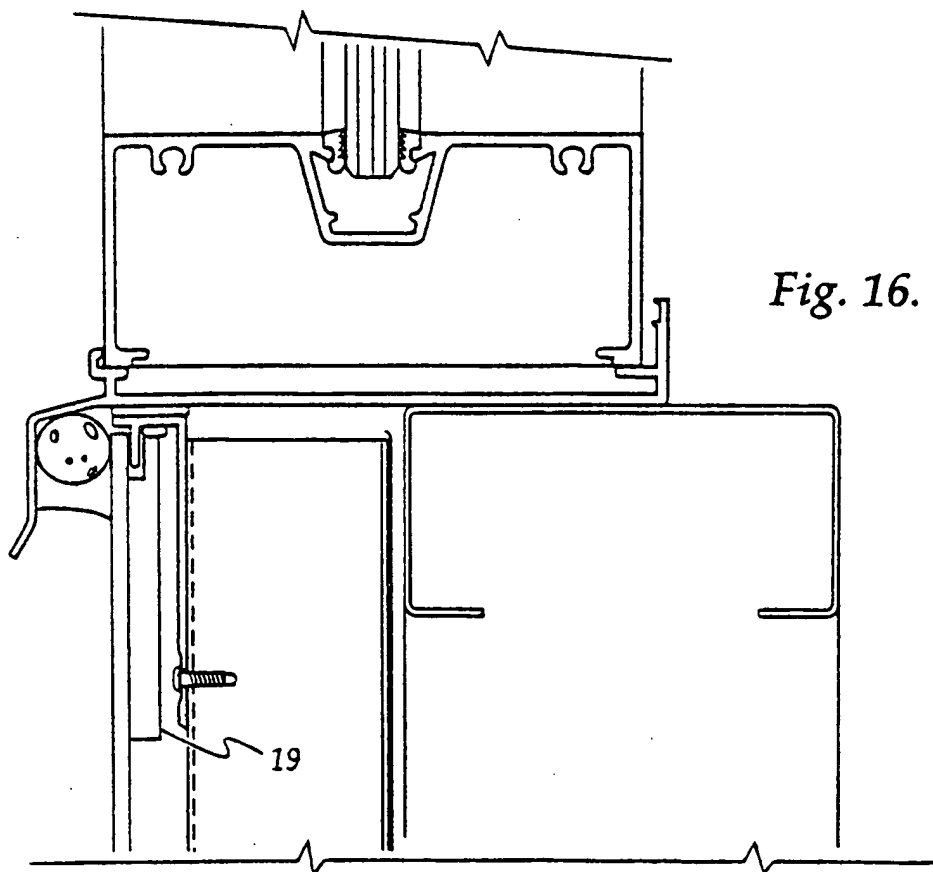


Fig. 16.

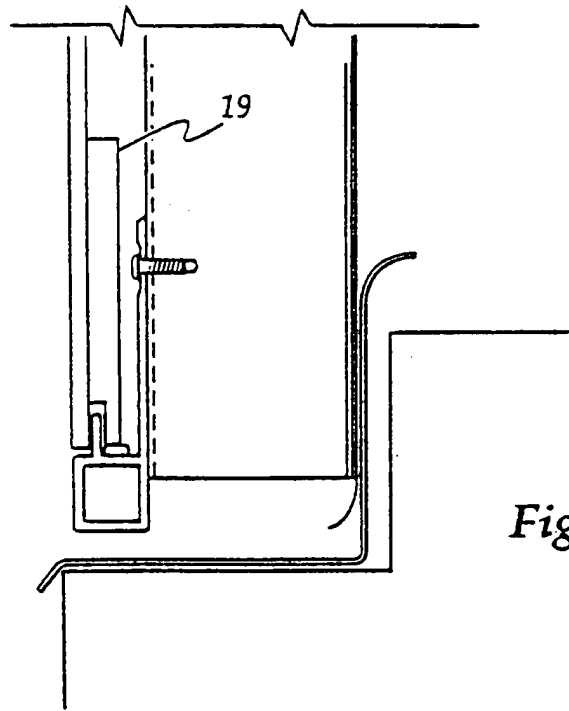


Fig. 17.

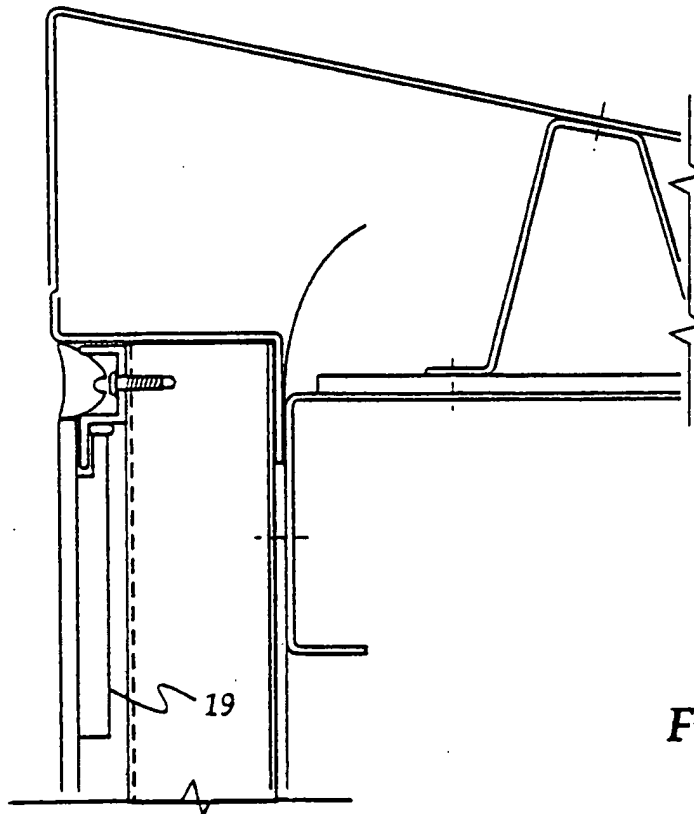


Fig. 18.